direction, or one that is misaligned. The deskewing feature may be performed by the application, without input from a user as to how to deskew a captured digital image. For example, the user may select the deskew button shown in FIG. **15** to automatically deskew. The deskew feature implemented by the application may use various deskewing methods. For example, the application may apply four-point perspective transformation to the image. The deskew feature may take four points and transform the image so that the four points have ninety-degree corners. In an implementation, the four points may be alignment indicators captured in an image.

[0114] The material data collection system may also pass a maximum width and height. However, the material data collection system may need additional user input to correct a final aspect ratio is correct so that the material data collection system may vertically scale or horizontally scale the image. In an implementation, the material data collection system is aware of the size of a capture guide in a digital image. With the capture guide measurements, the material data collection system may use the alignment indicators to automatically position the four points to feed into the four-point perspective transformation algorithm. With the capture guide, the material data collection system knows the exact dimensions of the cutout portion, and the material data collection system may use this information to automatically apply the vertical or horizontal scaling to correct the image after the four-point perspective transformation is applied. Without the capture guide, a user may need to manually move the points to the correct location before applying the four-point perspective transformation.

[0115] FIG. **16** shows a screen capture of an image adjustment functionality, in an embodiment. For example, if a photo of the material was at an inappropriate distance or incorrect orientation, the user may move the corners of the digital image to adjust the crop of the digital image. In FIG. **16**, the digital image is a square, but the material data collection system may be adapted for use with any polygon shapes. In this example, a digital image has captured a sample material **1604** and measurement scales **1606**. A user may adjust application provided alignment indicators **1602** to select the corners of the sample material.

[0116] In a step **828**, the application transforms the digital image according to the input provided. The application can use the features detected in the photo together with the indicators on the capture guide to automatically apply transformations. Some examples of transformations possible include perspective transformation, rotation transformation, fisheye projection, and affine transformation. For example, the application uses the information specified by the four circular points to perform one or more of deskewing the digital image, rotating the image, scaling the image, or other adjustments. Further, the material data collection system may use positions of the application provided alignment indicators to remove the capture guide or calculate a transformation to remove lens aberration effects, such as lens warp or fisheye effect. In an implementation, the material data collection system applies a bump distortion transformation to the digital image to reverse the effects of the lens, like fisheye warping. With the capture guide, the material data collection system may use the edges of the capture guide to auto adjust the parameters of the transformation so that the pixels on the edges match a straight line between the cut-out section corners. The material data collection system may also transform the pictures by removing edges or corners of the digital images, for example to correct for a pin cushion effect.

[0117] In a step **830**, the material data collection system selects black markers from the capture guide in the capture digital image. The black markers may contain computer readable information regarding their location on the capture guide. Alternate implementations of the material data collection system may include other markers, such as white markers, black markers, RYB, RYBGCM, or any combination of these.

[0118] In a step **832**, the material data collection system selects calibration markers from the capture guide in the capture digital image. In an implementation, the material data collection system includes black or white markers or both to perform chromaticity correction. The material data collection system may also include color markers in conjunction with black or white markers to perform color correction. The markers may contain computer readable information regarding their location on the capture guide. For example, markers may be paired so that each marker indicates its location as compared to one or more other markers on the capture guide.

[0119] In a step **834**, the material data collection system may perform corrections on the captured digital image. Embodiments of the material data collection system may perform color correction, chromaticity correction, or both using markers. Using the white and black markers, the application can apply a color correction to even the lighting and set the proper black and white points for the pixels. This may assist the material data collection system in generating a "true" color image for the captured digital image, that does not include any artifacts introduced by different lighting sources, intensities, or angles. For example, there may be overhead lighting, natural window lighting, shadow from the camera or camera user, and table lighting all captured in the same digital image. The material data collection system may adjust the captured digital image, so that variations of lighting introduced by the different lighting sources is corrected.

[0120] In the embodiment where a capture guide includes black or white markers to assist the material data collection system in color correction, the black or white markers may be included on the capture guide, in an area that does not obscure the sample. A black marker on the surface of the capture guide is colored flat black or RGB (0, 0, 0). This is used by color correction logic to adjust the photo pixels in a way to make the black marker a specific pixel color. A white marker on the surface of the capture guide may be flat white or RGB (255, 255, 255). This is used by the color correction logic to adjust the photo pixels in a way to make the white marker a specific pixel color. The material data collection system may use the color correction logic to adjust the colors of the image so that the white and black markers are all the same respective pixel color. In an implementation, the color correction logic may use Contrast Limited Adaptive Histogram Equalization (CLAHE).

[0121] The material data collection system may include analyzing markers found on the capture guide, to perform color analysis and adjustments. For example, the color analysis may adjust brightness across an image so that markers captured in the image are the same. This may make brightness across the image even. If the material data collection system determines that a captured digital image